MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

BCN2314 – COMPUTER NETWORKS AND INTERNET COMPUTING

(All sections/ Groups)

24 OCTOBER 2019
9.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTION TO STUDENTS

1. This question paper consists of 3 pages (including cover page) with 4 questions only.

2. Attempt ALL FOUR questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

Question 1 (25 Marks)

(i) Classify two features that the data link layer and transport layer have in common. Illustrate two features in which they differ.

(10 Marks)

(ii) How does the network layer in a connection-oriented packet-switching network differ from the network layer in a connectionless packet-switching network?

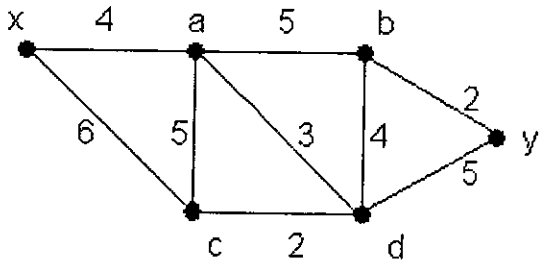
(15 Marks)

Question 2 (25 Marks)

(i) Distinguish the difference between a physical address, a network address, and a domain name with an example of each.

(10 Marks)

(ii) Using Dijkstra's Algorithm, Shows each steps clearly to find the shortest path between x to y.



(15 Marks)

Question 3 (25 Marks)

(i) Examine the Application layer protocols and Transport layer protocols using suitable examples.

(10 marks)

(ii) Compare Routing and forwarding in Network layer. Explain destination based forwarding with suitable examples.

(15 Marks)

Continue....

Question 4 (25 Marks)

(i) Discuss UDP streaming, HTTP streaming and Adaptive Streaming. Illustrate the drawbacks of UDP streaming?

(15 Marks)

(ii)

a. On GSM networks it is possible to perform an active man-in-the-middle attack. Determine this is not possible (or less trivial) on later generations of the standard such as UMTS and LTE? (2 Marks)

b. A telecom provider is considering updating its cell towers to only support the more secure A5/3 cipher. Assuming we cannot break A5/3, would this measure protect against active man-in-the-middle attacks? Illustrate.

(4 Marks)

c. Currently it is quite easy to perform IMSI-catching attacks, as a phone will always reveal its IMSI when asked for it. This can, for example, be used to trace users. To counter this, a provider suggests the following solution: a phone will encrypt its IMSI before sending it with the public key of the home network. Identify this solution protect against all traceability attacks (both for GSM and 3G)? Determine the advantage on this solution.

(4 Marks)

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